Battleship Game API Design Document

1. Main API Endpoints

HTTP Method	URL	Description
POST	/game/start	Create a new game
POST	/game/ship/place	Place a ship on the grid manually
POST	/move/shot	Record a player move
GET	/game/:gameId/status	Get the current status of the game

2. Data Models

ER Diagram:

Description:

- **Games**: Stores game state, including game ID, player ID, and status.
- **Ships**: Stores ship details, including ship ID, type, size, and position.
- **Moves**: Records player moves, including move ID, game ID, position, and result.

DDL (Data Definition Language) Statements:

```
CREATE TABLE games (
    id INT AUTO_INCREMENT PRIMARY KEY,
    player_id VARCHAR(255) NOT NULL,
    status ENUM ('IN_PROGRESS', 'FINISHED') DEFAULT 'IN_PROGRESS',
    created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP
);
```

```sql
CREATE TABLE
    ships (
        id INT AUTO_INCREMENT PRIMARY KEY,
        gameId INT NOT NULL,
        type VARCHAR(50) NOT NULL,
        position TEXT NOT NULL,
        size INT NOT NULL,
        created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
        updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE
CURRENT_TIMESTAMP,
        FOREIGN KEY (gameId) REFERENCES games (id) ON DELETE CASCADE
    );


CREATE TABLE moves (
    id INT AUTO_INCREMENT PRIMARY KEY,
    gameId INT NOT NULL,
    position VARCHAR(5) NOT NULL,
    result VARCHAR(50) NOT NULL,
    FOREIGN KEY (gameId) REFERENCES games(id) ON DELETE CASCADE
);
```

3. Frameworks / Libraries

Name of the package	What would you accomplish using that?
ExpressJS	Web Application Framework
Sequelize	ORM for database operations
mysql2	MySQL database driver
Jest	Unit Test
TypeScript	Typed superset of JavaScript

ts-node   TypeScript execution environment for Node.js

4. Main Programs and Tools

Name of the program	What would you accomplish using that?
Visual Studio Code	IDE for writing and debugging code
MySQL Workbench	GUI tool for managing MySQL databases
Postman	Tool for testing API endpoints
Git	Version control system
npm (Node Package Manager)	Manage project dependencies